Statewide Agencies Create Reliable, Interoperable Radio Networks

With Cisco® IPICS, reliable IP circuits replace analog circuits, and personnel can join radio channels using any radio system as well as phones and PC clients.

Executive Summary

Statewide government agencies—forestry, fish and game, water, transportation, and others—require dependable communications with personnel distributed over wide geographic areas. Today, effective communication is hampered by unreliable analog links that connect the various radio networks, as well as the lack of interoperability among the different types of radios used throughout the state. With Cisco IPICS, statewide agencies can send all radio communications over the same reliable IP network used for the agency's data traffic. In addition, personnel can join talk groups using any type of radio, IP phones, cell phones, regular phones, or the Cisco Push-to-Talk Management Console (PMC) software, which emulates a push-to-talk (PTT) radio.

Challenge

Statewide agencies struggle with three main communications challenges:

- Unreliable networks: Radio towers are generally connected by analog circuits, which are not designed for high reliability. Circuit failures can prevent radio communications during emergencies as well as day-to-day operations.
- Lack of interoperability among radio systems: Many statewide agencies use at least two incompatible radio systems, including UHF, VHF, 700-MHz, 800-MHz, and PTT. When groups using different radios collaborate for large-scale incident response, they cannot join the same radio channel. Instead, they must resort to using cell phones or a dispatch service, or else purchase extra radios to distribute to other teams during collaborative response.
- Inability to manage communications from alternate locations: The dispatcher is usually bound to a management console in the operations center—a problematic setup if the operations center experiences a power outage or flooding, for example, or if the dispatcher cannot travel to the operations center because of weather or road conditions.

Business Benefits

Cisco IPICS enables reliable, flexible communications within statewide agencies without requiring the purchase of new radio systems. Radio traffic from existing radios travels over the existing IP network just like any other kind of voice, video, or data traffic (Figure 1). Agencies gain the inherent benefits of IP networks, including resiliency, scalability, and management, using widely available skills and tools.

Agencies also gain the flexibility to join people to the talk group regardless of the type of device they are using: any vendor's radio, IP phone, cell phone, public switched telephone network (PSTN) phone, or Cisco IPICS PMC client. An administrator simply adds each type of radio system that the agency uses to Cisco IPICS. Then the various channels can be bound together dynamically to create virtual talk groups. A group retains ownership of its channel when it is included in a virtual talk group.

The dispatcher can manage Cisco IPICS from a Web browser in any location, including other districts, government offices, or even the dispatcher's home, using a secure VPN connection. The flexibility to manage communications from any location supports agency continuity of operations plans.

Solution

The Cisco IPICS portfolio of products and applications provides cost-effective and comprehensive communications interoperability between push-to-talk (PTT) radio systems and devices such as mobile phones, IP phones, public switched telephone network (PSTN) phones, and PC clients. Based on proven IP standards, Cisco IPICS takes advantage of ubiquitous IP networks to extend the reach of traditional communications networks and also to provide notification using email, pager notification, and Short Message Service (SMS). Using Cisco IPICS, public sector agencies and enterprises can intelligently apply resources to streamline operations and rapidly respond to routine events as well as emergencies.

A typical solution includes:

- Headquarters: Cisco IPICS server
- Branches: Cisco integrated services router with the Land Mobile Radio (LMR) feature set, which converts radio signals from analog to IP, and supports tone control at each district office
- Dispatch centers: Cisco PMC

Intelligent Networking

Cisco IPICS takes advantage of the Cisco Service-Oriented Network Architecture (SONA), an architectural framework that enables organizations to maximize the value of their network services and resources. The Cisco SONA framework makes it possible to centrally manage all radio systems, other voice systems, and data over a common, unified platform, increasing efficiency and the value of the agency's network assets while lowering capital and management costs.

Why Cisco?

- Financial stability: Radio systems have very long life spans, and agencies look for a vendor with the financial health and stability to provide continued support.
- Independence from radio vendors: Cisco IPICS works with any vendor's radio system, giving agencies the flexibility to deploy the system that best meets their business needs at the time.
- Availability of local partners for support: State agencies that deploy Cisco IPICS can receive deployment assistance and ongoing support from Cisco Advanced Services or local Cisco Advanced Technology Partners.
- Integrated IP: Whereas other vendors have approached radio interoperability by layering an application on top of the IP network, Cisco designed Cisco IPICS from the beginning to take

full advantage of the inherent advantages of IP, including open standards, availability, redundancy, resiliency, and scalability. Integrated IP makes Cisco IPICS a comprehensive communications interoperability platform that is faster and has a longer life than interoperability systems that use IP for transport alone.

For More Information

For more information, go to: http://www.cisco.com/go/ipicssolution.

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